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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/417,832	10/14/1999	TOMONARI HORIKIRI	35.C13929	8008

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EXAMINER

RUTHKOSKY, MARK

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-11

Office Action Summary

Application No.

09/417,832

Applicant(s)

HORIKIRI ET AL.

Examiner

Mark Ruthkosky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Summary

1. Claims 1, 2 and 4-7 are pending.

Claim Rejections - 35 U.S.C. § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The rejection of claims 1-5 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been overcome by the applicant's amendment.

Claim Objections

4. The objection to Claims 6 and 7 under 37 CFR 1.75c as being in improper form because these claims depend from a multiple dependent claim is withdrawn as the claims had been amended by preliminary amendment to depend from claim 4.

Claim Rejections - 35 U.S.C. § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Green et al. (WO 98/11619).

The instant claims are to a gel electrolyte containing a gelling agent and an ionically conductive material which is liquid at room temperature.

Green et al. (WO 98/11619) teaches an electrolyte which comprises a composite of a polymer and a molten salt immobilized within the polymer. The molten salts may be pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide, polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents which are capable of forming a polymer associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract.) Thus, the claims are anticipated.

7. Claims 1-5 and 7 are rejected under 35 U.S.C. 102(a) as being anticipated by JP 11185836 A.

JP 11185836 A teaches an electrolyte formed with a salt and gelling agent (English abstract.) The salt is a liquid salt such as imidazolium or pyridinium salts. The gel includes a

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polymer materials which reads upon structure 1 of claim 5 (shown in the abstract) These polymers are gelling agents which are capable of forming a polymer associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. The materials are used in photoelectrochemical cells using electrochromic elements as taught in the abstract. Thus, the claims are anticipated.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. (WO 98/11619) as applied to claims 1-4 and 6-7 above, and further in view of GB (2,212,504.)

The teachings of Green et al. (WO 98/11619) as applied to claims 1-4 and 6-7 have been presented above. Green et al. (WO 98/11619) does not teach the use of the amide-substituted cyclohexane ring as the gelling agent of the electrolyte. GB (2,212,504) teaches a solid polyacrylamide electrolyte which includes an amide-substituted cyclohexane ring as a plasticizer (or gelling agent as known in the art.) Claim 1 discloses an amide linked material which may include a cycloalkyl-group. The electrolyte salts are dissolved in the polymer materials in order to form gels (see page 5, lines 9-30). The amine is substituted, however the material is shown to

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dissolve the salt materials and conduct charge. It would be obvious to one skilled in the art at the time the invention was made to use a polymer material with functional groups suitable for ionic conduction such as in the invention of Green et al. (WO 98/11619) as the ionic salts are known to transfer charge across this polymer medium. It would be obvious to use the polymer materials of GB (2,212,504) in the invention of Green, as the material is shown to be used for the same purpose to dissolve a salt in a polymer material and form a gel electrolyte for an electrochemical device.

New Claim Rejections - 35 U.S.C. § 103

10. Claims 1, 2 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US 5,470,667), in view of Green et al. (WO 98/11619).

Williams et al. (US 5,470,667) teaches a cell comprising a gel electrolyte that includes an organic solvent, an electrolyte salt and a gelling agent such as sorbitols including DBS (which are polyhydroxy compounds, see col. 1, line 65- col. 2, line 49.) The gelling agent inherently gels by forming a fibrous associated body by intermolecular bonding. Williams et al. (US 5,470,667) does not teach a gel electrolyte that includes an ionically conductive material that is liquid at working temperature. In Williams, the electrolyte is a salt dissolved in an organic solution.

Green et al. (WO 98/11619) teaches an electrolyte which comprises a composite of a polymer and a molten salt immobilized within the polymer. The molten salts may be pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide,

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polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents which are capable of forming a polymer associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract, page 3.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to include a liquid salt as an ionically conductive material in Williams as the materials will provide improved ionic conductivity and improved operation at high temperatures as taught by Green. Green et al. (WO 98/11619) shows molten salts such as pyridinium or imidazolium in polymer gel electrolytes which are provided to transfer charge. One of ordinary skill in the art may substitute these liquid salts in Williams to provide improved ionic conductivity and operation at high temperatures. Further, it would be obvious to one of ordinary skill in the art at the time the invention was made to use the combination of a gel electrolyte with a liquid salt as an electrolyte in electrochromic windows as Green teaches gel electrolytes are used in electrochromic windows. The instant electrolyte will provide the same function of transferring charge.

11. Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makoto Ue (Electrochemica Acta), in view of Green et al. (WO 98/11619).

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Makoto Ue teaches a cell comprising a gel electrolyte that includes an organic solvent, an electrolyte salt and a gelling agent such as DBS. The gelling agent inherently gels by forming a fibrous associated body by intermolecular bonding. Makoto Ue does not teach a gel electrolyte that includes an ionically conductive material that is liquid at working temperature. In Makoto Ue, the electrolyte is a salt dissolved in an organic solution.

Green et al. (WO 98/11619) teaches an electrolyte which comprises a composite of a polymer and a molten salt immobilized within the polymer. The molten salts may be pyridinium or imidazolium salts (see page 2, lines 1-10.) Polymers include polyethylene oxide, polyacrylonitrile and PVDF amongst others (see page 2, lines 10-21.) These polymers are gelling agents which are capable of forming a polymer associated body by coordination bonding or hydrogen bonding. Functional groups, such as carbonyls, are noted in these materials. These materials are also noted in the instant specification for the same use as the instant invention (page 2). The electrolyte is used in electrochemical cells and electrochromic windows (see abstract.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to include a liquid salt as an ionically conductive material in Williams as the materials will provide improved ionic conductivity and improved operation at high temperatures as taught by Green. Green et al. (WO 98/11619) shows molten salts such as pyridinium or imidazolium in polymer gel electrolytes which are provided to transfer charge. One of ordinary skill in the art may substitute these liquid salts in Williams to provide improved ionic conductivity and operation at high temperatures.

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Response to Arguments

12. Applicant's arguments filed 2/6/2002 have been fully considered but they are not persuasive.

With regard to the amended claims, the new limitations are described by a process of forming a fibrous body. MPEP 2113 states that "even though product by process claims are limited and defined by the process, determination of patentability is based on the product itself." As such, the product claims are anticipated by the rejections applied. The new rejections have been applied to show that the process of forming the fibrous body is also well described in the art.

With regard to the rejection based on JP '836, the applicant's can submit a sworn English translation of the priority document to overcome the reference as prior art.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Correspondence

14. Any inquiry regarding this communication or a previous communication should be directed to Examiner Mark Ruthkosky, whose telephone number is (703) 305-0587 or his supervisor, Patrick Ryan, whose phone number is (703) 308-2383. Please note that Examiner Ruthkosky is out of the office the first Friday of each bi-week period. The PTO official fax number is 703-872-9310, while the PTO after-final fax number is 703-872-9311.



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